

# Fuel potential of poultry litter

UNIVERSITY PARK - The use of broiler or turkey litter as a solid fuel source has received little attention. Primary attention has been directed of the use of broiler and turkey litter as a fertilizer. Poultry litter can be used to replace or supplement organic fertilizer for the production of crops and provide a source of minor plant nutrients.

While the recycling of poultry litter as a fertilizer to conserve nutrients is an admirable objective, the concentration of animal units per tillable acre in the area containing Pennsylvania's broiler and turkey industries has increased to the point that alternatives to application on adjacent land must be explored.

The alternative to land application of poultry litter most often discussed is the production of methane. Methane represents a fossil fuel replacement which can be burned as a heat source or used to power an internal combustion engine, most often for the generation of electricity.

Because the fertilizer value of the effluent from methane generation is not reduced, the production of methane from poultry litter to serve as a fossil fuel replacement is an attractive alternative.

The fact that the fertilizer value of the effluent from methane production is not reduced means that methane generation is not a true alternative to land application for animal wastes. Methane production results in an intermediate product which can increase the potential value of the original poultry litter as a fertilizer.

True alternatives to land application of poultry litter in areas of concentrated animal units include transporting the animal waste or methane digester effluent to other geographic areas where the material could safely be used as a fertilizer, or finding uses that do not include land disposal.

Evaluation of potential uses must be carefully reviewed to make sure that they are true

alternatives to land application and do not represent, as does methane, an intermediate product ultimately requiring land application.

When moving poultry litter to other geographic areas for land application, transportation and handling costs are reduced with a management system that produces a dry, concentrated product. The effluent of methane generation does not produce this type of product.

### Solid fuel

One method which eliminates most of the need for land disposal is the utilization of broiler and turkey litter as a solid fuel. Litter from a properly managed poultry house is a dry product, approximately 20-30% moisture, which can be stored with a minimum of facilities until needed. Unlike methane which, for all practical purposes, must be utilized as produced, litter as a solid fuel can be easily stored until needed.

Research indicates that 20-30% moisture poultry litter has a net heat value of approximately 3500 BTU's per pound. This value will vary depending upon the type of litter material and the moisture content.

Thus, 18 pounds of average poultry litter will contain the net heat value found in each gallon of L.P. gas. At the present fuel value, poultry litter has a net heat value equivalent of approximately \$75.00 per ton. This is about twice the value of poultry litter as a replacement for the nutrients in commercial fertilizer.

When using the calculated value as a criterion for evaluating alternative uses of poultry litter, the value should be determined at the point of use.

The alternative which includes transporting poultry litter from areas of concentrated animal units to other geographic areas for land application should be evaluated on the value of poultry litter as a

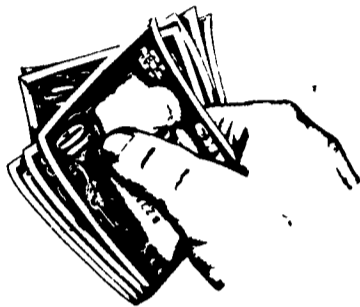
replacement for the nutrients in commercial fertilizer at the point of application

It is becoming increasingly apparent that the concentration of animal units per tillable acres in some geographic areas has increased to the point that alternatives to the application of animal nutrients on adjacent land must be evaluated.

As ecologically sound alternatives are evaluated, one objective should be to maximize the return to the producer. The "best" alternative could vary between types of animals and even among producers of the same class of animals.

The alternatives evaluated must not exclude non-traditional uses such as the burning of poultry litter. The burning of broiler and turkey litter for energy is a potentially high economic return alternative because such use would replace non-renewable fossil fuels.

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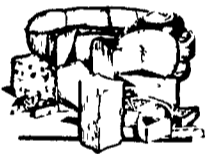


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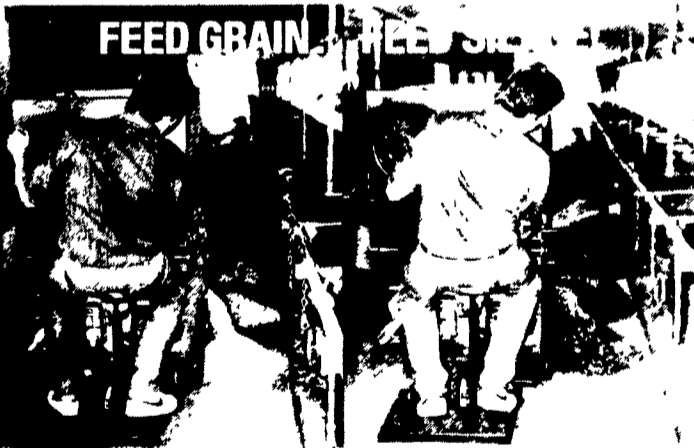
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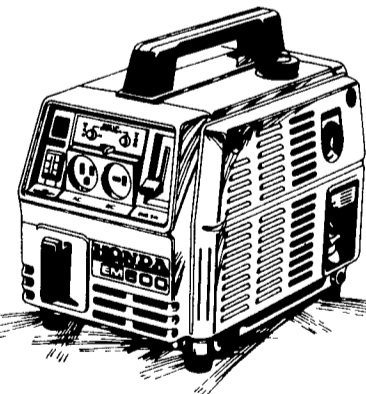
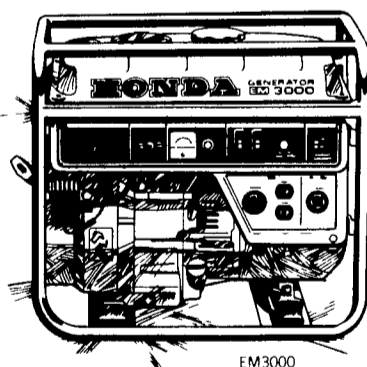
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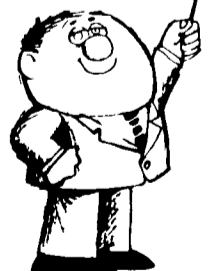


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